

CLAIMS

1. A method for forming a semiconductor material (25, 90, 100, 130) from powders comprising at least one component belonging to the group formed by the elements of column IV of the Mendeleiev table and their alloys, characterized in that it comprises a step of compression of said powders and a thermal processing step such that part at least of the powders is melted or made viscous.

2. The method of claim 1, characterized in that the compression and thermal processing steps are simultaneous.

3. The method of claim 1 or 2, characterized in that the thermal processing is such that only powders belonging to a specific area of the material are melted or made viscous.

4. The method of any of claims 1 to 3, characterized in that the powders comprise silicon powders and powders of at least another component, the thermal processing being such that the silicon is not melted and that at least one of the other components is melted or made viscous.

5. The method of any of claims 1 to 3, characterized in that the powders comprise doped semiconductor powders and undoped semiconductor powders, the thermal processing being such that only the doped powders are melted.

6. The method of any of claims 1 to 5, characterized in that the compression step is preceded by a step consisting of placing powders on a plate (10), the powders being different as to their nature, their granulometry, and/or their doping according to their location on the plate.

7. The method of any of claims 1 to 6, characterized in that in the compression step, said powders are pressed between plates (10, 20) having a surface capable of texturizing the surface of the material.

8. A semiconductor material (25, 90, 100, 130) obtained at least partially by compression and thermal processing of powders comprising at least two distinct areas (102, 106, 108, 110, 114, 116, 118) formed of distinct components belonging to the group formed by the elements of column IV of the Mendeleiev table and the alloys thereof.

9. The material of claim 8, wherein said areas are superposed.

10. A structure or a component formed of one or comprising at least one semiconductor material comprising grains  
5 and/or aggregates exhibiting energy gaps of different value.